

REMARKS

In response to the Final Office Action mailed May 27, 2005, Applicants respectfully request reconsideration. Claims 1-66 were previously pending in this application. No claims have been amended, canceled or added by this request. As a result, claims 1-66 are pending for examination with claims 1, 23, 27, 32, 57 and 62 being independent. To further the prosecution of this application, each of the rejections set forth in the Office Action has been carefully considered and is addressed below. The claims as presented are believed to be in allowable condition.

I. The Finality of the Office Action is Premature under MPEP §706.07(a)

Initially, Applicant appreciates the Examiner's careful and thorough review of Applicant's arguments, and the detailed remarks made by the Examiner in the Office Action. However, it is respectfully asserted that the finality of the Office Action is premature under MPEP §706.07(a). Specifically, section 706.07(a) states that "second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement." (Emphasis added).

Applicant respectfully points out that the rejection of each of claims 1-66 under §112, ¶2 is an entirely new ground of rejection. Applicant has not amended the claims, nor has an information disclosure statement been filed since the first Office Action was issued. The language "physical connection" was never before rejected as being indefinite under §112, ¶2 and is a new ground of rejection that Applicant has not had the opportunity to address. Accordingly, the finality of the Office Action is improper. Applicant respectfully requests that the finality of the Office Action be withdrawn.

II. Rejections Under 35 U.S.C. §112

The Office Action rejects claims 1-66 under 35 U.S.C. 112, second paragraph, as purportedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant respectfully traverses this rejection.

The Office Action asserts that it is uncertain what Applicant means when the term "physical connection" is recited. Applicant respectfully points out that the term "physical

connection" is coupled with the term "through the network" in the claims. Precisely what the "physical connection through the network" comprises will depend on the nature and configuration of the network. Lines 5-11 at page 27 of the specification state:

The specific implementations of the embodiments of the present invention discussed above provide a verification of the physical path between the requesting HBA and the storage system solely by verifying the physical port of entry for the requesting HBA into the network. However, it should be appreciated that the present invention is not limited in this respect, as other implementations can be employed to verify that the requesting HBA is connected to the shared resource through other required physical connections (e.g., physical connections between switches that comprise the network).

The above description mentions both ports and/or physical connections between switches as potentially forming the physical connections through the network. A network is formed from a plurality of devices connected over some communication medium. Accordingly, in an information transfer between any of the two devices (source and destination), a path is formed through the network which may be direct or pass through one or more intermediate devices on the network (e.g., the path may include a direct connection to a destination port or may pass through one or more switches). The physical connection through the network may include one or more of the physical connections (e.g., a port on the destination, or switch port, etc.) that are encountered via this link between source and destination. While the composition of a physical connection may differ from one network to another or from one particular communication link to another, in any given network configuration and communication link between devices, the physical connection through the network can be identified. Accordingly, the term "physical connection" is believed to be definite and Applicant respectfully requests that the rejection be withdrawn

II. Rejections Under 35 U.S.C. §102

The Office Action rejects claims 1-66 under 35 U.S.C. 102(e) as purportedly being anticipated by US Patent No. 6,343,324 (Hubis et al.). Applicant respectfully traverses this rejection.

In the "Response to Arguments" section, the Office Action asserts that the "WWN comparison made by Hubis can verify the physical connection of the device." Applicant

respectfully disagrees. The WWN is merely a number that uniquely identifies a device and is independent of how and where a device is connected to a network, and what physical connections form a path through the network to another device. For example, if a device A with a first WWN communicates with a data storage device, a particular physical connection through the network is established. If the device A is disconnected and a device B with a different WWN is connected in its place, the physical connection through the network will be the same, even though the WWN is different. Conversely, the same WWN can be presented via different physical connections through the network (e.g., via spoofing or by a device such as device A being moved to a different physical connection). The WWN is entirely independent of, and, by itself, cannot verify a physical connection through the network. Applicant does not disagree that a WWN could be used to verify a physical connection through the network (e.g., by associating it with a network configuration dependent ID), however, Hubis does not disclose or suggest performing such a verification.

A. Claims 1 and 32

The Office Action points to column 12, lines 27-35 of Hubis as purportedly showing denying attempted access by a device to the shared resource when a connection through the network is different than a first connection through the network used by the device to access the shared resource. However, this excerpt merely describes using the WWN to determine whether the WWN name appears in the permissions table associated with a target LUN. It does not determine anything about the physical connection of the device through the network, or whether such a physical connection is the same as or different than that which was previously used.

Access to the shared storage device in Hubis is determined solely on the WWN, which by itself is incapable of verifying or otherwise determining anything about the physical connection of the device through the network. Nowhere does Hubis disclose or suggest “determining whether the one of the plurality of devices is attempting to access the shared resource through a physical connection through the network that is different than a first physical connection through the network used by the first device to access the shared resource,” as recited in claim 1. Therefore, claim 1 patentably distinguishes over Hubis and is in allowable condition.

Claims 2-22 depend from claim 1 and are allowable for at least the same reasons.

Claim 32 recites an apparatus for use in a computer system including a plurality of devices, a shared resource shared by the plurality of devices, and a network that couples the

plurality of devices to the shared resource. The apparatus includes an input to be coupled to the network and at least one controller coupled to the input. Nowhere does Hubis disclose or suggest a controller to “determine whether the one of the plurality of devices is attempting to access the shared resource through a physical connection through the network that is different than a first physical connection through the network used by the first device to access the shared resource,” as recited in claim 32. Therefore, claim 32 patentably distinguishes over Hubis and is in allowable condition.

Claims 33-56 depend from claim 32 and are allowable for at least the same reasons.

B. Claim 23 and 57

The Office Action cites various sections of Hubis in rejecting claims 23 and 57. However, it is unclear what the Office Action considers the “first identifier that uniquely identifies the device in a manner that is independent of a physical configuration of the computer system” and what the Office Action considers “the second identifier that uniquely identifies the device in a manner that is dependent upon the physical configuration of the computer system,” as recited in claims 23 and 57. (Emphasis added).

In Hubis, there are several identifiers that might operate as the first identifier, most notably the WWN. The fibre loop ID may, in turn, operate as the second identifier. However, Hubis simply does not disclose or suggest comparing a presented second identifier with a stored second identifier to determine whether the same physical connection has been used. In particular, Hubis does not compare a presented fibre loop ID with a stored fibre loop ID to determine whether the physical connection is different, as suggested by the Office Action in the rejection of claim 24. In fact, the cited excerpt in Hubis (col. 14, lines 13-20, 45-55), discusses just the opposite. In particular, by use of Host ID Map 155, a host computer can change its fibre channel loop ID without affecting its permissions. It should be appreciated that no comparison between configuration dependent identifiers is being made. Moreover, Hubis actually permits the physical connection to be changed without disturbing the access permissions.

Accordingly, Hubis simply does not disclose or suggest “comparing a value of the second identifier presented by one of the plurality of devices to the stored value of the second identifier for the first device,” wherein the second identifiers identify the device “in a manner that is dependent upon the physical configuration of the computer system,” as recited in claim 23. Therefore, claim 23 patentably distinguishes over Hubis and is in allowable condition.

In addition, not only does the type of information being compared distinguish over Hubis, but so does the purpose of the comparison. Hubis does not disclose or suggest comparing *any* type of information for the purpose of “determining that the one of the plurality of devices is attempting to login to the storage system through a physical connection through the network that is different than the first physical connection,” as recited in claim 23. Thus, claim 23 further distinguishes over Hubis for this additional reason.

Claims 24-26 depend from claim 23 and are patentable for at least the same reasons.

Claim 57 recites an apparatus for use in a computer system including a plurality of devices, a storage system shared by the plurality of devices, and a network that couples the plurality of devices to the storage system. The apparatus includes an input to be coupled to the network, a storage device and at least one controller coupled to the network and the storage device. Nowhere does Hubis disclose or suggest a controller to “compare a value of the second identifier presented by the one of the plurality of devices to the stored value of the second identifier for the first device,” nor does it compare any values to “determine that the one of the plurality of devices is attempting to access the storage system through a physical connection through the network that is different than a first physical connection used by the first device in logging into the storage system,” as recited in claim 57. Therefore, claim 57 patentably distinguishes over Hubis and is in allowable condition.

Claims 58-61 depend from claim 57 and are allowable for at least the same reasons.

C. Claim 27

The Office Action again asserts that, at column 10, lines 33-40, Hubis discloses the limitation “in response to one of the plurality of devices attempting to login to the network and representing itself to the network as a first device, determining whether the one of the plurality of devices is attempting to login to the network through a port that is different than a first port of the network through which the first device previously logged into the network.” This is incorrect.

Column 10, lines 33-40 do not show determining whether a device is attempting to login to the network through a different port. Rather, the above excerpt merely describes defining how logical volumes are mapped via multiple controllers and I/O processors, and relates to the internal mapping of controller and I/O processor combinations to the storage volumes, not to

determining whether a port to which a particular host is connected is the same or different as that used in a previous access.

As Hubis discusses in the immediately following paragraph (i.e., column 10, lines 41-56), the logical volume mapping is implemented using the Port Mapping Table 191, which has an entry for each controller, I/O processor and Logical Volume combination. However, the Port Mapping Table 191 does not determine whether a device is attempting to login from a different port. As discussed above (and as detailed in column 14, line 27 – column 15, line 9, and FIG. 3A), during login, access permissions are solely described as being determined by whether the WWN provided in the login information is present in the Volume WWN Table for the targeted Logical Volume.

That is, the verification of a valid access path consists of associating the WWN name with the access path and ensuring that the WWN appears in the permissions tables indexed via that path. However, Hubis never checks to see whether access is made on same or different ports. That is, nowhere in the above excerpt asserted in the Office Action, or in the entirety of the Hubis reference, does it disclose or suggest “determining whether the one of the plurality of devices is attempting to login to the network through a port that is different than a first port of the network through which the first device previously logged into the network,” as recited in claim 27. Therefore, claim 27 patentably distinguishes over Hubis and is in allowable condition.

Claims 28-31 depend from claim 27 and are allowable for at least the same reasons.

D. Claim 62

The Office Action asserts that, at column 11, lines 45-57 and column 12, lines 4-35, Hubis discloses “at least one controller that is responsive to one of the plurality of devices attempting to login to the network and representing itself to the network as a first device, to determine whether the one of the plurality of devices is attempting to login to the network through a port that is different than a first port of the network through which the first device previously logged into the network, and to deny the attempted login by the one of the plurality of devices to the network when the one of the plurality of devices is attempting to login to the network through a port that is different than the first port.” Applicants respectfully disagree.

Column 11, lines 45-57 describe the use of the Volume WWN Table 130 to determine allowed and disallowed access to a specific logical volume, stating in relevant part: “if a host computer 101 sends a new command to controller 106, the controller validates the WWN,

controller port, and LUN against data in the table 130 prior to servicing the host command.” It should be appreciated that Volume WWN Table 130 merely stores the WWN of hosts that are allowed to access each Logical Volume. The Volume WWN Table 130 does not store, nor can it verify, the port at which a device is attempting a login. Column 12, lines 4-35 goes on to explain in further detail that there exists a Volume WWN Table (for each logical volume) that contains a listing of each WWN that is permitted access such that each volume can be independently designated as accessible by any combination of hosts. This does not relate to determining whether a represented device is attempting to access storage through a different port.

Neither in the above excerpts, nor elsewhere does Hubis disclose or suggest “determining whether the one of the plurality of devices is attempting to login to the network through a port that is different than a first port of the network through which the first device previously logged into the network,” as recited in claim 62. Therefore, claim 62 patentably distinguishes over Hubis and is in allowable condition.

Claims 63-66 depend from claim 62 and are allowable for at least the same reasons.

CONCLUSION

A Notice of Allowance is respectfully requested. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,
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